

**UNITED STATES DEPARTMENT OF COMMERCE****United States Patent and Trademark Office**Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/615.081 07/12/00 SUENAGA

Y XA-9335

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WASHINGTON DC 20036

MMC1/0419

EXAMINER

TREAS. J

ART UNIT	PAPER NUMBER
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2872

DATE MAILED:

04/19/01

Please find below and/or attached an Office communication concerning this application or proceeding.

**Commissioner of Patents and Trademarks**

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/615,081	SUENAGA ET AL.
	Examiner Jared Treas	Art Unit 2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 04 January 2001.
- 2a) This action is FINAL.                  2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-16 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved.
- 12) The oath or declaration is objected to by the Examiner.

#### Priority under 35 U.S.C. § 119

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

#### Attachment(s)

- 15) Notice of References Cited (PTO-892)                  18) Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_ .
- 16) Notice of Draftsperson's Patent Drawing Review (PTO-948)                  19) Notice of Informal Patent Application (PTO-152)
- 17) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 and 7.                  20) Other: \_\_\_\_\_ .

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 1-4, 10 and 11 are rejected under 35 U.S.C. 102(e) as being anticipated by Shafer et al.

In figure 4, Shafer et al discloses a catadioptric optical system comprising a first catadioptric imaging optical system (122), a second refractive imaging optical system (129) having an aperture diaphragm (131), first and second planes (120 and 140) respectively, first and second reflectors (124 and 123) respectively, wherein the first reflector (124) is a concave reflector and all of the optical elements of the catadioptric optical system are disposed on a single linear optical axis.

Regarding claims 4 and 11, the catadioptric optical system as shown in figure 8 has an exit pupil on the imaging element (86) which appears to be substantially circular.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 5-9 and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shafer et al in view of Official Notice.

Shafer et al discloses a catadioptric optical system as described above, but fails to specifically recite the magnification and focal lengths of the optical elements in such a manner easily determine whether such data would meet the claimed conditions as set forth in claims 5-7 and 12-14.

Official Notice is taken that mirror and lens groups having focal lengths and/or magnifications which meet the claimed conditions are well known in catadioptric optical systems. As such it would have been obvious to one having ordinary skill in the art at the time the invention was made to arrange the focal length and/or magnification of the mirror or lens group to be within applicant's claimed condition for the purpose of achieving a users desired need as well as determining the optimum focal lengths and/or magnifications of the optical elements involves only routine skill in the art.

Shafer et al discloses a catadioptric optical system as described above, but fails to disclose the catadioptric optical system to be used with the specific projection exposure apparatus set forth in claims 8, 9, 15 and 16. Official Notice is taken that such exposure apparatuses utilizing catadioptric optical systems are well known in the art. As such it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the catadioptric optical system of Shafer et al into well known

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projection exposure apparatuses for the purpose of reducing optical aberrations as well as providing the exposure apparatus with a large numerical aperture.

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US Patent 6,169,627 issued to Schuster discloses a catadioptric optical system comprising lenses and first and second concave reflectors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jared Treas whose telephone number is (703) 308-3171. The fax number for the organization where this application or proceeding is assigned is (703) 308-2864.

Any inquiry of a general nature or relating to the status of the application or any other proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Jared Treas  
J.T.  
04/13/01



Cassandra Spyrou  
Supervisory Patent Examiner  
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